

# Technology and Inequality

## WHAT YOU NEED

- [Technology Profile](#)  
STUDENT ACTIVITY SHEET

## MATERIALS

- [Early Cars: Fact Sheet for Children](#)
- [What is technology?](#)
- [Has there always been technology?](#)



*Photo Credit: Science NetLinks*

## PURPOSE

To help students become more familiar with different types of technology, and to understand that not all people have the same access to technology.

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## CONTEXT

In this lesson, students study briefly the history, evolution, and social benefits of the automobile (as a general model for the kinds of technologies that were once enjoyed only by those who could afford them). Though most technologies today are enjoyed by more and more people, students will weigh the reasons why technologies like the automobile, computers, cell phones, and others are not accessed or used equally by all groups of society. They will recognize that issues like high cost, special training, and limited need contribute to these discrepancies.

As long as there have been people, there has been technology. On the whole, technology has been a powerful force in the development of civilization, all the more so as its link with science has been forged. Technology is an intrinsic part of a cultural system and it both shapes and reflects the system's values. In the broadest sense, technology extends our abilities to change the world: to cut, shape, or put together materials; to move things from one place to another; to reach farther with our hands, voices, and senses. We use technology to try to change the world to suit us better. But the results of changing the world are often complicated and unpredictable. (*Science for All Americans*, p. 25.)

In general, developments in technology have brought enormous benefits to almost all people. Most people today have access to goods and services that were once luxuries enjoyed only by the wealthy—in transportation, communication, nutrition, sanitation, health care, entertainment, and so on. On the other hand, the very behavior that made it possible for the human species to prosper so rapidly has put us and the earth's other living organisms at new kinds of risk. (*Science for All Americans*, pp. 32–33.)

Students at this level can become interested in comparing present technology with that of earlier times, as well as the technology in their everyday lives with that of other places in the world. They can imagine what life would be like without certain technology, as well as what new technology the future might hold. Reading about other civilizations or earlier times than their own will illustrate the central role that different technologies play. (*Benchmarks for Science Literacy*, p. 54.)

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## MOTIVATION

Have students read [What is technology?](#) and [Has there always been technology?](#), from the Adventures in Science and Technology website. Reading these sections will give the class a basic orientation about the prevalence of technology and help them to answer questions like these:

- What is technology? How do you define it? (The three definitions given for technology are: (1) "technology is anything made by humans, as opposed to things made by nature," (2) technology is the "tools humans can make to help them succeed in their natural environment," and (3) "anything not made by nature.")
- How long has technology been around? (Since humans have existed. Cave dwellers made and used simple tools to survive in the natural environment. Later, the Industrial Revolution in the 1700s helped to make machinery a major part of everyday life. )
- What are some examples of technology? (Answers will vary. Elicit many responses. Technology is a major part of civilization and it is all around us.

The article cites a hammer, paper, openers, tables, and winter coats as tools or things that people use to succeed in the environment. It also refers to computers, satellites, and an artificial heart as today's more modern inventions. Write the examples students give on the board to be used later in the lesson.)

- Are the shoes you are wearing technology? Why or why not? (Yes, they are even though most people today think of computers and high-tech gadgets as being technology.)

Continue the discussion to include benchmark-related questions that will help to orient and prepare them for the body of the lesson:

- What are some examples of technology that come in the form of goods and services?
- In addition to the transportation and computer industries, what areas of society rely heavily on technology? Give examples.
- If all people wanted to own an automobile or computer, could they? Why or why not?
- Do all people know how to use an automobile or computer? Why or why not?
- Do all people need to know how to use an automobile or computer? Why or why not?

(Accept all answers, but ask students to support their views with explanations.)

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## DEVELOPMENT

### **The Automobile**

Inform students that they will take a closer look at one area of technology (transportation) that affects all aspects of life—the automobile. To help them better focus before they read about the automobile, ask students:

- Can anyone tell me when the first automobiles were built?
- Before there were cars, how do you think most people got around?
- Do you think all people were able to own cars back then? Why or why not?

(Accept all answers, but ask students to support their views.)

Next, distribute the [Early Cars: Fact Sheet for Children](#), from the Smithsonian Institution website, that you printed out ahead of time and have students read it. Students should stop reading after they cover the section, "Why do most cars today run on gasoline?"

Among other things, this resource provides facts on when cars were first made, how they worked, the kinds of people who drove them, why they became popular, and other related insights about the early, yet far-reaching impact of the automobile.

When finished, students should discuss what they have read, including comprehension questions like these:

- What kind of fuel did the earliest cars run on? (Steam.)
- Why were gasoline cars more popular than steam or electric cars in the early 1900s? (They were easier to use and could travel farther without adding fuel.)
- What kinds of people bought cars in the early 1900s? (The wealthy, doctors, people living in the country, families, etc.)
- Could all people own and drive cars? Why or why not? (No. Cars were expensive, a big responsibility, and they required special training and a license to drive.)
- How did this new form of technology make life easier for people? (Cars added to people's pleasure, comfort, and status. They were more dependable than horses, convenient for errands and social visits, and could cover long distances.)
- Why did the Model T become more popular than other cars in the early 1900s? (It cost less than other cars, but was sturdy and practical.)
- For people who could not afford cars back then, what other kinds of transportation did they use? (Many people took trains, rode horses or used them to draw wagons or carriages, or walked.)

Once students have a good understanding of what they have read, have them contrast what they have learned with what they know about cars today. Questions may include:

- How are cars today different from what they were back in the early 1900s? (Answers will vary. In general, cars today are better built, faster, more fuel efficient, more comfortable and sophisticated, more widely available, etc.)
- Do all people own cars today? Why or why not? (No, they do not. Although many people do own cars, they are still either too expensive or impractical for many people to own. Reasons for not owning a car are many. For example, people living in cities may find it cheaper and easier to take public transportation. More and more people are also recognizing that automobile pollution ultimately hurts the environment. In addition, younger and older people may not have driver's licenses or be qualified or capable of driving an automobile.)
- For people who do not own cars, what other forms of transportation do they take (as compared to people in the early 1900s)? (Answers will vary. Other forms of transportation include: walking, biking, skateboarding, buses, trains, taxis, planes, motorcycles, and more.)

### **Other Technologies**

After briefly examining the evolution and social impact of one form of technology from

the past to the present, students are now in a better position to consider other forms of technology in terms of their initial development, use by certain groups of people, social impact, and greater (but still uneven) access by all people in the present.

Divide the class into groups of two or three and pass out the [Technology Profile](#) student sheet for each group. Explain that they will be assigned one form of technology to learn more about. Have them use the library to find basic background information on the technology, which will help them answer the questions on the assignment sheet. (If they have any problems finding what they need, encourage them to ask the librarian for assistance.) Explain that their answers will also depend on their own knowledge about the technology and its use and availability in society today.

The technologies that students can research and report on can include these:

- Airplanes (Transportation)
- Computers (Electronics)
- Movies (Entertainment)
- Cellular Phones (Communications)
- Surgery (Health Care)
- Toilets (Sanitation)
- Home Security Systems (Electronics)
- Electronic Pagers (Communications)
- Others (perhaps from those written on the blackboard)

When groups have finished filling out their student sheets, have them discuss their findings with the class.

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## ASSESSMENT

As an extension of the student sheet discussions, students may be asked questions like these that can help them better apply and personalize what they have learned:

- Have you ever used \_\_\_\_\_ (technology)? If so, how often?
  - Will you ever need to use \_\_\_\_\_ (technology) in the future? Why or why not?
  - What would life be like without \_\_\_\_\_ (technology)?
  - Do you think \_\_\_\_\_ (technology) should be available to all people whenever they need it? Why or why not?
  - What kinds of technology do you think will be needed in the future? Why?
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## EXTENSIONS

[Kid's Corner](#) at the Peterson Automotive Museum is a fun and interesting online activity area where students can play games and take an online tour of the museum's many technological exhibits in the Discovery Center.

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Students can learn more about inventors and inventions by exploring the [Inventor of the Week Archive](#) from The Invention Dimension. This extensive database offers an alphabetical listing of numerous inventors of the past and present and detailed information about their important accomplishments.

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